MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMCMD-01	1	The MPS/PM-1 simulator shall be capable of receiving command data as UDP command blocks.	SIMSS has been replaced by MPS in all requirement entries.
PMCMD-02	1	The MPS/PM-1 simulator shall be capable of configuring command receipt processing in IP mode.	
PMCMD-02.01	1	The MPS/PM-1 simulator shall be capable of configuring IP mode command receipt to UDP MULTICAST mode.	
PMCMD-02.02	1	The MPS/PM-1 simulator shall be capable of configuring IP mode command receipt to any valid UDP MULTICAST IP address.	
PMCMD-02.03	1	The MPS/PM-1 simulator shall be capable of configuring IP mode command receipt to any valid UDP MULTICAST Port number.	
PMCMD-02.04	1	The MPS/PM-1 simulator shall be capable of configuring IP mode command receipt to any block length between one and 6000 bytes.	
PMCMD-03	1	The MPS/PM-1 simulator shall accept operator directives that enable or disable the following elements of the command validation process: Codeblock BCH Parity Validation, Transfer Frame Header Validation, FARM Protocol Validation, and User Command Packet Header Validation.	
PMCMD-03.01	1	When the Codeblock BCH parity validation element is enabled, the command subsystem will verify for each codeblock of each received CLTU that the BCH parity byte matches a computed value and that the spare bit is equal to zero. If any codeblock of a CLTU fails validation, an event message will be generated and that entire CLTU will be discarded. When this element is disabled, the parity byte will be assumed to be valid.	
PMCMD-03.02	1	When the Transfer Frame Header validation element is enabled, the command subsystem will verify that all of the fields of the Transfer Frame header, except the sequence number, match expected values and ranges as defined in the ICD. If the Transfer Frame Header validation fails, an event message will be generated and the entire Transfer Frame will be discarded. If applicable, the CLCW corresponding to that Transfer Frame's virtual channel will be updated with error information. When this element is disabled, the Transfer Frame header values will be assumed to be valid.	
PMCMD-03.03	1	When the FARM validation element is enabled, the command subsystem will verify that the Transfer Frame sequence number is valid as expected for FARM-1 protocol as defined in the ICD. If the FARM validation fails, an event message will be generated and the entire Transfer Frame will be discarded. If applicable, the CLCW corresponding to that Transfer Frame's virtual channel will be updated with error information. When this element is disabled, the Transfer Frame sequence number will be assumed to be valid.	
PMCMD-03.04	1	When the Command Packet Header validation element is enabled, the command subsystem will verify that the Command Packet Header fields contain valid values as defined in the ICD. If the Command Packet Header validation fails, an event message will be generated and the Command Packet will be discarded. This requirement is applicable to the spacecraft command packet format and the instrument command packet format. When this element is disabled, the Command Packet Header is assumed to be valid.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMCMD-04	2	The MPS/PM-1 simulator shall accept operator directives to change all fields of the spacecraft and instrument CLCWs.	
PMCMD-05	2	The MPS/PM-1 simulator shall simulate spacecraft command acceptance according to the COP-1 protocol.	
PMCMD-05.01	2	The MPS/PM-1 simulator shall perform Type AD spacecraft command acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.	
PMCMD-05.01.1	2	The MPS/PM-1 simulator shall reject Type AD spacecraft commands and post a command rejected event message if the Lockout bit is set in the spacecraft CLCW.	
PMCMD-05.01.2	2	The MPS/PM-1 simulator shall reject Type AD spacecraft commands, post a command rejected message, and set the Lockout bit in the spacecraft CLCW if (1) the Frame Sequence Count in the Transfer Frame header is more than 90 counts greater than or more than 90 counts less than (modulo 256) the Report Value field of the spacecraft CLCW and (2) FARM-1 protocol checking is enabled.	
PMCMD-05.01.3	2	The MPS/PM-1 simulator shall reject Type AD spacecraft commands, post a command rejected message, and set the Retransmit bit in the spacecraft CLCW if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts greater than (modulo 256) the contents of the Report Value field of the spacecraft CLCW and (2) FARM-1 protocol checking is enabled.	
PMCMD-05.01.4	2	The MPS/PM-1 simulator shall reject Type AD spacecraft commands and post a command rejected message if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts less than (modulo 256) the contents of the Report Value field of the spacecraft CLCW and (2) FARM-1 protocol checking is enabled.	
PMCMD-05.01.5	2	The MPS/PM-1 simulator shall clear the spacecraft CLCW Lockout bit upon receipt of an UNLOCK Control Command (Type BC) containing the spacecraft VCID.	
PMCMD-05.01.6	2	The MPS/PM-1 simulator shall set the spacecraft CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (Type BC) containing the spacecraft VCID.	
PMCMD-05.01.7	2	The MPS/PM-1 simulator shall increment the Report Value field (modulo 256) of the spacecraft CLCW upon receipt of a Type AD spacecraft command whose Frame Sequence Count matches the current spacecraft CLCW Report Value field contents, provided that FARM-1 protocol checking is enabled.	
PMCMD-05.02	2	The MPS/PM-1 simulator shall perform Type AD instrument command acceptance checks in accordance with the FARM-1 protocol if FARM-1 protocol checking is enabled.	
PMCMD-05.02.1	2	The MPS/PM-1 simulator shall reject Type AD instrument commands and post a command rejected event message if the Lockout bit is set in the instrument CLCW.	
PMCMD-05.02.2	2	The MPS/PM-1 simulator shall reject Type AD instrument commands, post a command rejected message, and set the Lockout bit in the instrument CLCW if (1) the Frame Sequence Count in the Transfer Frame header is more than 90 counts greater than or more than 90 counts less than (modulo 256) the Report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMCMD-05.02.3	2	The MPS/PM-1 simulator shall reject Type AD instrument commands, post a command rejected message, and set the Retransmit bit in the instrument CLCW, if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts greater than (modulo 256) the Report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.	
PMCMD-05.02.4	2	The MPS/PM-1 simulator shall reject Type AD instrument commands and post a command rejected message if (1) the Frame Sequence Count in the Transfer Frame header is between one and 90 counts less than (modulo 256) the Report Value field of the instrument CLCW and (2) FARM-1 protocol checking is enabled.	
PMCMD-05.02.5	2	The MPS/PM-1 simulator shall clear the instrument CLCW Lockout bit upon receipt of an UNLOCK Control Command (Type BC) containing the instrument VCID.	
PMCMD-05.02.6	2	The MPS/PM-1 simulator shall set the instrument CLCW Report Value field to the data value contained within the third byte of a SET V(R) Control Command (Type BC) containing the instrument VCID.	
PMCMD-05.02.7	2	The MPS/PM-1 simulator shall increment the Report Value field (modulo 256) of the instrument CLCW upon receipt of a Type AD instrument command whose Frame Sequence Count matches the current instrument CLCW Report Value field contents, providing that FARM-1 protocol checking is enabled.	
PMCMD-06	1	The MPS/PM-1 simulator shall provide the capability to monitor and display command processing status.	
PMCMD-07	1	Upon operator request, the MPS/PM-1 simulator shall store received commands for posttest review subject to specified storage capacities.	
PMCMD-08	3.1	The MPS/PM-1 simulator shall use information from the PDB to perform command identification processing. The Command subsystem shall match command bit patterns received to stored bit patterns to locate command mnemonics in the PDB.	
PMCMD-09	4	The MPS/PM-1 simulator shall provide the capability to respond to that subset of spacecraft commands that are defined in the PM-1 PDB Command Execution Verification (CEV) file. If the PDB CEV file contains end-item verifier telemetry mnemonics associated with the identified command, the associated telemetry point(s) will be set to the corresponding value(s) defined in the CEV file.	
PMCMD-10	3.1	The MPS/PM-1 simulator shall generate a simulator event message whenever a command is received.	
PMCMD-10.01	3.1	The MPS/PM-1 simulator shall generate a simulator event message to display the command mnemonic whenever a valid command is decoded.	
PMCMD-10.02	3.1	The MPS/PM-1 simulator shall generate a simulator event message to display the values of command submnemonics whenever a command containing submnemonics is decoded.	
PMCMD-11	3.1	The MPS/PM-1 simulator shall generate a simulator event message whenever a command error is detected	
PMCMD-11.01	3.1	The MPS/PM-1 simulator shall generate a simulator event message indicating the command error detected whenever a command in error is decoded, provided that command validation is enabled.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMCMD-11.02	3.1	The MPS/PM-1 simulator shall generate an event message indicating that an unknown command has been received whenever a command cannot be matched to any PDB entry.	
PMCMD-12	6	The MPS/PM-1 simulator shall perform verification of selected fields of the Command Data Block (CDB) header of received commands. The fields to be verified shall be Message Type, Source, Destination, spacecraft identifier (SCID), and Sequence Count.	Requirement added with Release 6.
PMCMD-12.01	6	The MPS/PM-1 simulator shall generate event messages reporting inconsistencies in the verifiable fields of the CDB.	Requirement added with Release 6.
PMCMD-12.02	6	The MPS/PM-1 simulator shall execute operator directives that set expected values for verification of the Command Data Block (CDB) header.	Renumbered from PMCMD-12. Reworded slightly for accuracy.
PMCMD-12.03	6	The MPS/PM-1 simulator shall permit the operator to enable and disable CDB verification.	Requirement added with Release 6.
PMCMD-13	4P,5	The MPS/PM-1 simulator shall receive spacecraft memory and table loads via command blocks and shall store the load data in a load buffer (simulated spacecraft memory.)	Slightly reworded for Release 6.
PMCMD-13.01	6	The MPS/PM-1 simulator shall perform a validation of the command load data checksum, for those loads that contain a checksum.	Renumbered from PMCMD-14.
PMCMD-13.02	6	The MPS/PM-1 simulator shall permit the operator to inhibit the checksum validation.	Requirement added with Release 6.
PMCMD-14	6	The MPS/PM-1 simulator shall be capable of simulating a spacecraft memory dump of loaded data.	Requirement added with Release 6.
PMCMD-14.01	6	The MPS/PM-1 simulator shall be capable of copying a single memory load from the load buffer to the dump buffer.	Requirement added with Release 6.
PMCMD-14.02	6	The MPS/PM-1 simulator shall permit the operator to inhibit copying the memory load to the dump buffer.	Requirement added with Release 6.
PMCMD-15	6	The MPS/PM-1 simulator shall process commands that request or configure for a spacecraft memory dump.	Implemented via a combination of copy from command load buffer to dump buffer and operator directives that set up and enable dump APIDs.
PMCMD-16	1	The MPS/PM-1 simulator interface with EOC shall comply with the command interface formats and protocols specified in the EDOS to EGS Elements interface document	
PMCMD-17	5	The MPS/PM-1 simulator shall be capable of updating multiple command counters in telemetry. The command counters to be updated shall be as agreed upon with PM-1 project representatives.	
PMCMD-18	1	The MPS/PM-1 simulator shall interpret VCID 0 (spacecraft), VCID 1 (instrument), and VCID 16 and 17 (TIE critical) commands.	
PMCMD-19	6	The MPS/PM-1 simulator shall interpret multipart commands.	
PMCMD-20	1	The MPS/PM-1 simulator shall be capable of logging up to 8 MB of received commands during a testing session.	
PMCMD-21	4	The MPS/PM-1 simulator shall receive spacecraft commands in a CLTU bitstream through the serial interface at rates from 125 bps to 2 Kbps.	
PMGEN-01	1	The MPS/PM-1simulator shall be Year 2000 compliant	
PMGEN-02	1	The MPS/PM-1 simulator GUI shall set the simulated spacecraft time as directed by the operator.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMGEN-03	4	The MPS/PM-1 simulator shall be capable of executing a scenario script file.	
PMGEN-03.01	4	The MPS/PM-1 simulator shall be capable of executing operator directives via a scenario script to update telemetry parameters by mnemonic.	
PMGEN-03.02	5	The MPS/PM-1 simulator shall be capable of executing operator directives via a scenario script to retrieve and display the value of any telemetry parameter by mnemonic.	
PMGEN-03.03	4	The MPS/PM-1 simulator shall be capable of executing operator directives via a scenario script to start and stop telemetry transmission.	
PMGEN-03.04	4	The MPS/PM-1 simulator shall be capable of executing operator directives via a scenario script to start and stop transmission of CLCW packets.	
PMGEN-03.05	4	The MPS/PM-1 simulator shall be capable of executing operator directives via a scenario script to enable and disable all elements of command validation that are under operator control. See "PMCMD" requirements for those command validation elements that are controllable by the operator.	
PMGEN-04	4	The MPS/PM-1 simulator shall be capable of providing files of received or generated test data on electronic and physical media.	
PMGEN-05	1	The MPS/PM-1 simulator GUI shall acknowledge an operator request within 2 seconds of its entry.	
PMGEN-06	1	The MPS/PM-1 simulator GUI shall start execution of an operator request within 5 seconds of its entry.	
PMGEN-07	1	The MPS/PM-1 simulator shall be capable of maintaining an internal time code to a resolution of 125 milliseconds.	
PMGEN-08	1	The MPS/PM-1 simulator shall comply with the set of display guidelines specified in DSTL-92-007, Human-Computer Interface Guidelines, August, 1992.	
PMGEN-09	1	The MPS/PM-1 simulator shall comply with security provisions specified in the NASA Automated Information Security Handbook, NHB 2410.9A.	
PMGEN-10	1	The MPS/PM-1 simulator shall comply with the NASA Communications (Nascom) Access Protection Policy and Guidelines.	
PMGEN-11	1	The MPS/PM-1 simulator shall provide a hard disk drive with sufficient capacity to store the program bootstrap, executable files, and other simulation environment files, such as the Project Data Base and scenario files used during tests, and a TBD percent reserve.	
PMGEN-12	1	The MPS/PM-1 simulator shall provide a physical media storage device that can be used to support the exchange of small amounts of information with external systems and for system backups and data logging.	
PMGEN-13	1	The MPS/PM-1 simulator shall be portable.	
PMGEN-14	1	The MPS/PM-1 simulator shall provide an Ethernet interface that conforms to 10BaseT of the IEEE 802.3 standard.	
PMGEN-15	1	The MPS/PM-1 simulator shall interface with the EOC through the Ethernet interface using the Internet Protocol (IP) suite, including TCP/IP and UDP/IP.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMGEN-16	1	The MPS/PM-1 simulator shall receive CLTUs in command data blocks from the EOC and output EDUs (packets and CLCWs) to the EOC through the Ethernet interface. All data transfers through this Ethernet interface are based on UDP/IP protocol.	
PMGEN-17	6	The MPS/PM-1 simulator shall provide an offline utility to permit modification of the Command End-Item Verifiers file in the Oracle database.	Requirement added with Release 6 in response to DRTT CR # SMOdr08166.
PMGEN-17.01	6	The MPS/PM-1 simulator Command End-Item Verifiers modification utility shall permit the addition of a single record of the Oracle database end-item verifiers file at each invocation.	Requirement added with Release 6 in response to DRTT CR # SMOdr08166.
PMGEN-17.02	6	The MPS/PM-1 simulator Command End-Item Verifiers modification utility shall permit the modification of a single record of the Oracle database end-item verifiers file at each invocation. The Low Limit and State Text fields shall be the only fields that can be modified.	Requirement added with Release 6 in response to DRTT CR # SMOdr08166.
PMGEN-17.03	6	The MPS/PM-1 simulator Command End-Item Verifiers modification utility shall permit the deletion of a single record from the Oracle database end-item verifiers file at each invocation.	Requirement added with Release 6 in response to DRTT CR # SMOdr08166.
PMGEN-18	6	The MPS/PM-1 simulator shall provide a file selection browse capability.	Requirement added with Release 6 in response to DRTT CR # SMOdr08169.
PMGEN-19	3	The MPS/PM-1 simulator shall provide a configuration save and restore capability.	Requirement added with Release 6.
PMGEN-19.01	3	The MPS/PM-1 simulator shall be capable of saving module configuration information. The information saved shall consist of the modules that constitute a project, and the module links and link source/destination numbers.	Requirement added with Release 6.
PMGEN-19.02	3	The MPS/PM-1 simulator shall be capable of saving configuration information for IP modules, log modules, and Serial modules.	Requirement added with Release 6.
PMGEN-19.03	3	The MPS/PM-1 simulator shall be capable of saving multiple configurations in disk files.	Requirement added with Release 6.
PMGEN-19.04	3	The MPS/PM-1 simulator shall permit the operator to name a disk file in which configuration information shall be saved.	Requirement added with Release 6.
PMGEN-19.05	3	The MPS/PM-1 simulator shall permit the operator to restore configuration information upon initialization.	Requirement added with Release 6.
PMGEN-19.06	3	The MPS/PM-1 simulator shall be capable of restoring configuration information from an existing named disk file.	Requirement added with Release 6.
PMGEN-19.07	3	The MPS/PM-1 simulator shall be capable of displaying the names of the disk files when responding to a restore request during initialization.	Requirement added with Release 6.
PMGEN-19.08	See Note	The MPS/PM-1 simulator shall be capable of displaying the file creation date when responding to a restore request during initialization.	Not implemented. This would be a SIMSS function.
PMGEN-20	6	The MPS/PM-1 simulator shall be capable of executing multiple scenario script files simultaneously, up to the limit imposed by CPU and memory capacities.	Requirement added with Release 6 in response to DRTT CR # SMOdr08165.
PMGEN-20.01	6	The MPS/PM-1 simulator shall permit the operator full control of scenario script files that the operator has invoked. The control directives available shall consist of START, STOP, PAUSE, and RESUME.	Requirement added with Release 6 in response to DRTT CR # SMOdr08165.

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMGEN-20.02	6	The MPS/PM-1 simulator shall be capable of starting a scenario script in response to a command received. The operator shall not be able to STOP, PAUSE, or RESUME a scenario script started this way.	Requirement added with Release 6 in response to DRTT CR # SMOdr08165.
PMGEN-20.03	6	The MPS/PM-1 simulator shall be capable of invoking a scenario script from within a scenario script. The operator shall not be able to STOP, PAUSE, or RESUME a scenario script started this way.	Requirement added with Release 6 in response to DRTT CR # SMOdr08165.
PMGEN-20.04	6	The MPS/PM-1 simulator shall be capable of displaying the status of all scenario scripts that were started by the operator. This status shall consist of an indication as to whether the scenario script is running, paused, or finished, a display of the current line number, and a display of the directive currently being executed.	Requirement added with Release 6 in response to DRTT CR # SMOdr08165.
PMGUI-01	1	The MPS/PM-1 simulator shall accept and validate all operator directives.	
PMGUI-01.01	6	The MPS/PM-1 simulator GUI shall maintain a history list of directives entered by the operator. This history list shall store a maximum of 10 operator directives.	Requirement added with Release 6 in response to DRTT CR # SMOdr08164.
PMGUI-01.02	6	The MPS/PM-1 simulator GUI shall permit the operator to re-execute directives stored in the history list.	Requirement added with Release 6 in response to DRTT CR # SMOdr08164.
PMGUI-01.03	6	The MPS/PM-1 simulator GUI shall permit the operator to edit directives stored in the history list.	Requirement added with Release 6 in response to DRTT CR # SMOdr08164.
PMGUI-02	1	The MPS/PM-1 simulator GUI shall provide the capability to display command packets received.	
PMGUI-03	1	The MPS/PM-1 simulator GUI shall provide the capability to display telemetry and CLCW packets transmitted.	
PMGUI-04	1	The MPS-PM-1 simulator GUI shall provide the capability to display command and telemetry status.	
PMGUI-05	1	The MPS/PM-1 simulator GUI shall provide the capability to display the current receive and transmit network configuration to the operator.	
PMGUI-06	1	The MPS/PM-1 simulator shall accept and execute operator directives that set spacecraft time and GMT.	
PMGUI-07	1	The MPS/PM-1 simulator shall provide the capability to display the EDOS Service Header appended to transmitted telemetry packets.	
PMGUI-08	1	The MPS/PM-1 simulator shall provide the capability to display the Telemetry Packet Header of a selected APID.	
PMGUI-09	1	The MPS/PM-1 simulator shall provide the capability to display GMT and Spacecraft Times.	
PMGUI-10	2	The MPS/PM-1 simulator shall provide the capability to display the current values of the spacecraft and instrument CLCWs.	
PMGUI-11	1	The MPS/PM-1 simulator shall provide the capability to display event messages.	
PMGUI-12	1	The MPS/PM-1 simulator shall provide the capability to display telemetry and CLCW transmit status.	
PMGUI-13	1	The MPS/PM-1 simulator shall provide the capability to display command receipt status.	
PMGUI-14	1	The MPS/PM-1 simulator shall be capable of updating all displays periodically.	
PMGUI-15	6	The MPS/PM-1 simulator shall provide a generic buffer display.	In response to DRTT CR # SMOdr08168.

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PM-INIT-01	6	The MPS/PM-1 simulator shall be capable of selecting a desired version of the PDB at operator request during initialization.	
PM-INIT-01.01	6	During initialization, the MPS/PM-1 simulator shall be capable of querying an Oracle database to determine which versions of the PM-1 PDB are available. The version information returned from the database shall be displayed to the operator.	Implemented as an off-line query using SQL*Plus.
PM-INIT-01.02	6	During initialization, the MPS/PM-1 simulator shall provide the operator with the capability to select one version of the PM-1 PDB from among those that are resident within the Oracle database.	
PM-INIT-01.03	6	During initialization, if the operator does not select a version of the PM-1 PDB, the MPS/PM-1 simulator will default to the most recent version available in the database.	
PMMDL-01	See Note	The MPS/PM-1 simulator shall provide a telemetry parameter orbit modeling capability. The purpose of this capability is to simulate the behavior of a limited set of telemetry parameters on an orbit basis.	Implementation of the modeling capability, beyond which is currently provided by scenario files, has been deferred. The SIMSS group will be providing a generic modeling capability at a later date. Modeling will then be incorporated into a subsequent MPS release.
PMMDL-02		The MPS/PM-1 simulator shall turn on and off selected orbit modeling under operator control.	
PMMDL-03		The MPS/PM-1 simulator shall be capable of changing between static, table, or algorithm models under operator control	
PMMDL-04		The MPS/PM-1 simulator shall execute modeling directives that enable or disable selected orbit modeling.	
PMMDL-05		The MPS/PM-1 simulator shall execute modeling directives that associate any telemetry parameter with any predefined model.	
PMMDL-06		The MPS/PM-1 simulator shall execute modeling directives that change between static, table, or algorithm models.	
PMMDL-07		The MPS/PM-1 simulator shall provide the operator with an offline capability to access model functions and coefficients.	
PMMDL-08		The MPS/PM-1 simulator shall provide the operator with an offline capability to translate ASCII-formatted files containing static, table, and algorithm orbit modeling information into a binary form readable by The MPS/PM-1 simulator.	
PMTLM-01	4	The MPS/PM-1 simulator shall be capable of switching between IP and serial modes of operation for command receipt and telemetry transmission.	Requirement added in response to DRTT CR # SMOdr06370.
PMTLM-02	1,3	The MPS/PM-1 simulator shall provide the capability to transmit one stream of telemetry when in IP mode.	
PMTLM-03	3	The MPS/PM-1 simulator shall be capable of independently configuring telemetry and CLCW transmit when in IP mode.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMTLM-03.01	2,3	The MPS/PM-1 simulator shall be capable of transmitting packets containing CLCWs independently of telemetry transmission when in IP mode	
PMTLM-03.02	1	The MPS/PM-1 simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to UDP MULTICAST mode when in IP mode.	
PMTLM-03.03	1	The MPS/PM-1 simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to any valid UDP MULTICAST IP address when in IP mode.	
PMTLM-03.04	1	The MPS/PM-1 simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to any valid UDP MULTICAST Port number when in IP mode.	
PMTLM-03.05	1	The MPS/PM-1 simulator shall be capable of independently configuring IP mode telemetry and CLCW transmission to any block length between one and 6000 bytes when in IP mode.	
PMTLM-03.06	1	The MPS/PM-1 simulator shall be capable of independently configuring IP mode telemetry transmission to variable block length when in IP mode.	
PMTLM-04	4	The MPS/PM-1 simulator shall be capable of transmitting two streams of CADUs (simulating the I and Q channels) when in serial mode.	Requirement added in response to DRTT CR # SMOdr06370.
PMTLM-04.01	4	When in serial mode, the MPS/PM-1 simulator shall build S-band CADUs as described in the PM-1 Spacecraft to Ground ICD.	Requirement added in response to DRTT CR # SMOdr06370.
PMTLM-04.02	4	When in serial mode, the MPS/PM-1 simulator shall build and transmit Fill CADUs as described in the PM-1 Spacecraft to Ground ICD when there is not enough telemetry data available to fill a CADU.	Requirement added in response to DRTT CR # SMOdr06370.
PMTLM-05	3	The MPS/PM-1 simulator shall accept and execute operator directives that set the value of any telemetry parameter by mnemonic.	
PMTLM-06	5	The MPS/PM-1 simulator shall accept and execute operator directives that set the value of any location in the PM-1-simulated spacecraft memory.	
PMTLM-07	3	The MPS/PM-1 simulator shall accept and execute operator directives that request the value of any telemetry parameter for display.	Reworded slightly for accuracy.
PMTLM-07.01	6	The MPS/PM-1 simulator shall be capable of displaying telemetry parameter values in decimal raw counts and in Engineering Units	Requirement added with Release 6 in response to DRTT CR # SMOdr08170.
PMTLM-07.02	6	The MPS/PM-1 simulator shall use the PDB to define raw-data-to-EU and EU-to-raw-data conversions for telemetry parameters.	Renumbered from PMTLM-38. Reworded to reflect as-built design.
PMTLM-07.03	6	The MPS/PM-1 simulator shall permit the operator to update telemetry parameter values in decimal, hex, and octal raw data numbers, and in Engineering Units.	Entry via GUI window is in decimal and EU only.
PMTLM-07.04	6	The MPS/PM-1 simulator shall be capable of displaying multiple telemetry parameter values in a GUI window.	Requirement added with Release 6 in response to DRTT CR # SMOdr08171.
PMTLM-07.05	6	The MPS/PM-1 simulator shall be capable of displaying multiple iterations of a GUI window for display and update of telemetry parameters.	Requirement added with Release 6 in response to DRTT CR # SMOdr08171.
PMTLM-08	1	The MPS/PM-1 simulator shall accept and execute operator directives that request the contents of any telemetry packet.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMTLM-09	6	The MPS/PM-1 simulator shall accept and execute operator directives that request the value of any location or block of locations in simulated spacecraft memory.	Implemented as part of the generic buffer display capability (PMGUI-15)
PMTLM-10	5	The MPS/PM-1 simulator shall set initial telemetry parameter values from information extracted from the PM-1 PDB and user provided files.	
PMTLM-11	1	The MPS/PM-1 simulator shall accept and execute operator directives that result in changes to telemetry packet header values.	
PMTLM-12	6	The MPS/PM-1 simulator shall execute telemetry directives that control the PM-1 Solid State Recorder.	Implemented as part of the scenario script capability.
PMTLM-13	6	The MPS/PM-1 simulator shall provide for the storage of housekeeping telemetry to be used as playback data.	
PMTLM-14	4	The MPS/PM-1 simulator shall use the information from the PM-1 PDB to generate and transmit telemetry packets.	
PMTLM-14.01	3	The MPS/PM-1 simulator shall be capable of creating CCSDS-format telemetry packets from information contained in the PM-1 PDB telemetry packet specification file.	
PMTLM-14.02	3	The MPS/PM-1 simulator shall provide the capability to generate and transmit telemetry packets with APIDs identical to the PM-1 spacecraft.	
PMTLM-14.03	4	The MPS/PM-1 simulator shall use the APID and secondary key fields of the PM-1 PDB packet definition file to identify unique packets.	Requirement added in response to DRTT CR # SMOdr06279.
PMTLM-14.04	4	The MPS/PM-1 simulator shall generate a telemetry packet for each unique combination of APID and secondary key.	Requirement added in response to DRTT CR # SMOdr06279.
PMTLM-14.05	1,4	The MPS/PM-1 simulator shall accept and execute operator directives to set the packet generation rate for any APID and secondary key combination defined in the PM-1 PDB.	Requirement added in response to DRTT CR # SMOdr06279.
PMTLM-14.06	3	The MPS/PM-1 simulator shall populate the telemetry packet primary header fields in the following list in accordance with information obtained from the PM-1 Spacecraft to Ground ICD and applicable CCSDS documents: Version Number, Type, Secondary Header Flag, APID, Sequence Flag, Sequence Count, and Packet Length.	
PMTLM-14.07	4	The MPS/PM-1 simulator shall place the secondary key into the telemetry packet at the offset specified by the PM-1 PDB telemetry packet specification file and shall use the number of bits specified by that file.	Requirement added in response to DRTT CR # SMOdr06279.
PMTLM-14.08	4	The MPS/PM-1 simulator shall generate a telemetry packet secondary header in accordance with the secondary header type (SC, GIRD, or None for SUROM-TIE packets) implied by the contents of the packet type field of the PM-1 PDB telemetry packet specification file. For each secondary header type, the contents shall be as described in applicable sections of the PM-1 Spacecraft to Ground ICD.	
PMTLM-15	1	The MPS/PM-1 simulator shall insert simulated spacecraft time in the telemetry packet headers	
PMTLM-16	3	The MPS/PM-1 simulator shall maintain data values for all telemetry parameters defined in the PDB telemetry parameter specification file. These data values shall be available for display to the operator and for inclusion into telemetry packets.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMTLM-16.01	4	The MPS/PM-1 simulator shall be capable of inserting telemetry point values into packets using information from the PM-1 PDB telemetry description and telemetry parameter specification files.	
PMTLM-16.02	4	The MPS/PM-1 simulator shall use the APID and secondary key fields of the PDB telemetry parameter specification file to determine the correct packet for each telemetry parameter.	Requirement added in response to DRTT CR # SMOdr06279.
PMTLM-17	3	The MPS/PM-1 simulator shall send out telemetry packets at specified intervals of spacecraft time. These specific intervals shall be as defined by the PDB for each APID and secondary key combination and shall be modifiable by the operator.	Requirement added in response to DRTT CR # SMOdr06279.
PMTLM-18	5	The MPS/PM-1 simulator shall be capable of simulating memory dumps. The MPS/PM-1 simulator shall build packets based on the contents of the simulated memory.	
PMTLM-19	1	The MPS/PM-1 simulator shall execute telemetry directives that start and stop transmission of data.	
PMTLM-20	1	The MPS/PM-1 simulator shall accept and execute operator directives that start and stop logging of telemetry and CLCWs independently.	
PMTLM-21	1	The MPS/PM-1 simulator shall generate EDUs and EDOS data headers based on the User Datagram Protocol (UDP) format defined in the EDOS External ICD Data Format Control Document.	
PMTLM-22	6	The MPS/PM-1 simulator shall allow modification of any field within the EDOS data header.	In response to DRTT CR # SMOdr08167.
PMTLM-23	2	The MPS/PM-1 simulator shall provide the capability of transmitting the CLCW in the form of EDUs to EOC through EBnet.	
PMTLM-24	2	The MPS/PM-1 simulator shall provide the capability to enable and disable the transmission of CLCW EDUs.	
PMTLM-25	6	The MPS/PM-1 simulator shall provide for the storage of EDUs during the testing session for later transmission.	Reworded to reflect as-built design.
PMTLM-26	1	The MPS/PM-1 simulator shall transmit EDUs on an as built basis.	
PMTLM-27	1	The MPS/PM-1 simulator shall provide the capability to transmit EDUs using the UDP protocol.	
PMTLM-28	6	The MPS/PM-1 simulator shall provide the capability to transmit data files via FTP upon user request.	Implemented via the Windows NT FTP program.
PMTLM-29	6	The MPS/PM-1 simulator shall be capable of creating signal files and transmitting them via FTP at user request.	Not specifically implemented. May be emulated by transmit of an empty file via the Windows NT FTP program.
PMTLM-30	1	The MPS/PM-1 simulator interface with the EOC shall comply with the telemetry interface formats and protocols specified in the EDOS to EGS Elements interface document	
PMTLM-31	5	The MPS/PM-1 simulator, when acting as a spacecraft, shall comply with the telemetry data formats and protocols specified in the TGT to EDOS interface document.	
PMTLM-32	5	The MPS/PM-1 simulator, when acting as an EPGS, shall comply with the telemetry data formats and protocols specified in applicable interface documents for the EPGS to EDOS interface.	
PMTLM-33	6	The MPS/PM-1 simulator shall provide the capability to accept PM-1 telemetry data by electronic transmission and by physical media.	

MPS/Aqua Simulator Requirements

MPS/Aqua Requirement	Release Req. Met	MPS/Aqua (PM-1) Requirement Description	Comments
PMTLM-34	6	The MPS/PM-1 simulator shall be capable of transmitting the contents of a user provided file containing PM-1 telemetry data.	
PMTLM-35	1	The MPS/PM-1 simulator shall be capable of maintaining an internally generated time code.	
PMTLM-36	1	The MPS/PM-1 simulator shall set, adjust, and operate the spacecraft clock as commanded.	
PMTLM-37	3	The MPS/PM-1 simulator shall employ an offline utility to convert the ASCII-formatted PDB into a binary format useable by The MPS/PM-1 simulator.	
PMTLM-38	1	The MPS/PM-1 simulator shall provide the capability to store up to 8MB of transmitted EDUs.	Renumbered from PMTLM-39
PMTLM-39	5	The MPS/PM-1 simulator shall be capable of modifying multiple consecutive buffer locations via a single operator directive.	Requirement added in response to DRTT CR # SMOdr05859.
PMTLM-40	5	The MPS/PM-1 simulator shall be capable of a limited simulation of clock correlation telemetry. This shall be accomplished by populating APID 1000 packets with simulated GIIS and GIRD spacecraft time.	Requirement added in response to DRTT CR # SMOdr06821.
PMTLM-41	5.1	The MPS/PM-1 simulator shall maintain a VCDU counter in APID 1000 and maintain synchronization between it and the VCDU counter in CLCW packets when operating in IP mode, and will synchronize the APID 1000 VCDU counter with that of the enclosing VCDU when in serial mode.	Requirement added in response to DRTT CR # SMOdr07127.

Note: All MPS/Aqua requirements have been met with Release 6.0, delivered on 9/28/00, except for PMGEN-19.8 and the PMMDL (Modeling) requirements. The unmet requirements will be incorporated in a subsequent release, once the generic capabilities have been provided in the core SIMSS system.

Release Legend:

n – Release in which requirement was satisfied.
nP – Partially satisfied in Release n.